PREFACE

This consultative document is one of a series setting out proposals to implement each of the first group of directives made under Article 118A of the Treaty of Rome and adopted by the Council of Ministers of the European Community for implementation by member states by 31 December 1992.

In 1989 and 1990 the Council of Ministers agreed, on the proposal of the European Commission (EC), to a Framework directive on health and safety, together with five other directives. The latter deal with health and safety requirements for the workplace; the use of work equipment; the use of personal protective equipment; the manual handling of loads; and work with display screen equipment.

Each directive is, or will be, the subject of its own consultative document containing proposals for implementation by regulations made under section 15 of the Health and Safety at Work etc. Act 1974 (the HSW Act). The consultative documents are expected to be published between October 1991 and January 1992. The other directives are listed below with contact names and telephone numbers.

The policy of the Health and Safety Commission (HSC) on the negotiation of the EC's programme of health and safety directives has been set out in its Plans of Work for 1990-91 and 1991-92. Good progress had been made with the modernisation of British health and safety law by means of regulations made under the HSW Act which stood us in good stead in advancing British models as a basis for EC provisions. Nevertheless, we have had to recognise that the outcome of negotiations at Community level, especially under the new system of qualified majority voting introduced by the Single European Act, would necessarily involve the UK - and other member states - in compromises which would require changes and additions to UK health and safety regulations to meet the objectives of the directives. This is particularly the case because the provisions of EC directives tend to be more prescriptive and detailed than objective-setting regulations made in the UK under the HSW Act.

It now falls to the HSC to put forward proposals for implementing this first group of directives in the UK. Our strategy for implementing the Framework and associated directives, while meeting their objectives, is:

> to avoid disrupting the basic structure established by the HSW Act, and also to minimise change to the most recent regulations;
>
> to continue, where appropriate, the modernisation of health and safety law made prior to 1974, and to take the opportunity to repeal outdated UK legislation;
>
> to further the HSC/HSE philosophy of introducing control measures appropriate to the risk; and
>
> to propose regulations which meet the directives, but which generally do not go beyond them, so as to minimise the impact of alterations in the law at a time when the requirements of the EC necessarily mean considerable changes in the law. Nevertheless the HSC proposes, where appropriate, to apply the directives to the self-employed and to public safety in conformity with the approach adopted in the HSW Act and subsequent regulations.

Precisely how the strategy is to be applied depends on the terms of each directive and its relationship to UK law.

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The Framework directive mirrors the HSW Act by imposing broad general duties on employers and employees in all working activities (except domestic service). The principles laid down will be familiar to those concerned with health and safety in the UK. They are embodied in modern legislation and are an essential part of good practice. But while the objectives of the Framework directive coincide with those of existing UK law, the directive is generally more detailed on how those objectives are to be achieved. Consequently the proposals involve additional provisions generally in areas covered by existing law but where the obligations of the directive are explicit rather than implicit.

In the case of some of the other directives the relationship to UK law is rather different. Again there is generally little difference in the objectives to be attained but the British law which corresponds to the Workplace directive and the Use of Work Equipment directive is found in legislation which preceded the HSW Act and whose scope is limited to particular sectors of activity, principally the Factories Act 1961 and the Offices, Shops and Railway Premises Act 1963. In these cases it would be possible to meet the objectives of the directive by overlaying some new generally applicable provisions, or by trying to cover gaps in areas the law does not now cover. It seems best, however, to propose new general regulations in conformity with the duty under the HSW Act progressively to replace older law by a system of regulations operating under that Act. In the case of Personal Protective Equipment there is currently a mix of old style and new requirements. The approach is therefore to replace the former while enabling the latter to continue. The requirements of the Display Screen Equipment directive are new and separate additional regulations will be proposed.

The HSC's aim is to produce a series of easily understood regulations setting objectives to be met, supported where necessary by Approved Codes of Practice and/or other guidance containing practical advice.

We have sought to ensure that each set of proposals is consistent with the others and with any related proposals for which other government departments and agencies are responsible such as those being developed by the Department of Trade and Industry to implement directives under Article 100A of the Treaty (eg the regulations to implement the Personal Protective Equipment directive).

Other directives (such as those on Carcinogens and on Biological Agents) have been or are being negotiated under Article 118A of the Treaty. Some, particularly those on Extractive Industries and on Temporary or Mobile Worksites (principally the construction industry), will complement the first group by setting out provisions dealing with particular industries to which the Workplace directive does not apply. Consultative documents will be issued in due course setting out proposals for their implementation.

CONTACTS FOR THE OTHER FIVE DIRECTIVES

The Framework Directive - Sarah Jones (071-243 6488)

The Workplace Directive - Charles Leite (071-243 6389)

The Use of Work Equipment Directive - Neville Higham (071-243 6255)

The Use of Personal Protective Equipment Directive - Philip Lister (071-243 6386)

The Display Screen Equipment Directive - Nigel Watson (071-243 6116)

CONSULTATIVE DOCUMENT

Manual handling of loads

Proposals for Regulations and general guidance

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Introduction

1 This consultative document seeks comments on proposals from the Health and Safety Commission (HSC) for new Regulations on the manual handling of loads, and on general guidance in support of the Regulations. The proposals, set out in Annexes 1 and 2, are intended to reduce the very large incidence of injury and disability caused by manual handling and to implement in Great Britain the recent European Directive 90/269/EEC on this subject, reproduced at Annex 3. The Directive is one of several "daughters" under Framework Directive 89/391/EEC on workers' health and safety.

Why be concerned about manual handling?

2 More than a quarter of the accidents reported each year to the enforcing authorities are associated with the manual handling of loads. Sprains and strains, particularly of the back, are the injuries most commonly reported but there are also amputations and substantial numbers of fractures, cuts and bruises. Beyond this there is a largely unquantifiable problem of cumulative injury leading to physical impairment or even permanent disablement. No type of work is immune, whether in agriculture, construction, delivery activities, factories, hospitals, mines, offices, shops or warehouses.

Present legal position

3 Provisions applying to factories, construction work, offices, shops, railway premises, mines and quarries prohibit the employment of any person to lift, carry or move a load so heavy as to be likely to cause injury. Similar provisions apply to young persons in agriculture and to children in any employment. A specific weight limit applies to all employees in agriculture. In addition, the general duties of the Health and Safety at Work etc. Act 1974 (the HSW Act) apply to all work activities and require employers to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all their employees. These general duties also place comparable requirements upon the self-employed in respect of their own health and safety.

4 The legislation applying specifically to manual handling is inadequate. It applies only to certain work industries; and it has proved difficult to interpret and enforce. In view of the range of factors now recognised as affecting the risk of manual handling injury the continued use of a weight limit is inappropriate and cannot be justified on medical grounds.

Previous proposals

5 The HSC published consultative documents on manual handling in 1982 and 1988. The 1982 proposals would have imposed a general requirement, supported by guidance, prohibiting manual handling tasks likely to cause injury. The guidance introduced the concept of "action levels" based on weight ranges thought to be "safe" for the majority of workers under ideal conditions and expected to trigger action by employers to eradicate manual handling or make it safer. While there was considerable support for the introduction of new, comprehensive Regulations to control manual handling the form proposed was not well received: it was thought insufficiently flexible to accommodate the needs of particular industries and there was confusion as to the role of the "action levels".

6 The HSC's 1988 proposals differed considerably and were much better received. Consultation showed broad support for the concept of concise, positive Regulations backed by general guidance within which more detailed industry-specific guidelines could be devised. However, many consultees saw as essential some qualification of the main duties, the most common suggestion being introduction of the expression "so far as is reasonably practicable". There was also a general welcome for the concept of assessment as a basis for action, though consultees were concerned that the extent of the employer's obligations would be uncertain in the absence of some basic yardstick.

The European Directive

7 The 1988 consultative document coincided with publication of a draft European Directive on the manual handling of loads, and the HSC reproduced the European proposals alongside its own. By the summer of 1989 it was clear that early progress with the Directive was likely and the HSC decided to defer work on its own proposals until the scope and requirements of the Directive became clear.

8 The systematic approach set out in the HSC's proposals and the substantial response to the 1988 consultative document proved invaluable in negotiating the Directive. The UK's representatives were given a clear understanding of the views of both sides of industry and a sound knowledge of particular difficulties of concern to certain sectors. In consequence the UK was able to play a positive part in the negotiations, securing welcome improvements to the text.

9 European Directive 90/269/EEC on the manual handling of loads was adopted - ie finally agreed - in May 1990 and must be

put into effect by the end of 1992. The Directive, reproduced at Annex 3, requires employers to avoid manual handling which gives rise to a risk of injury. Where such manual handling cannot be avoided the employer must make an assessment and take appropriate measures to remove or reduce the risk of injury. The Directive lists a wide range of factors of relevance to the assessment and provides clear evidence of international acceptance of a modern ergonomic approach to the manual handling of loads. In doing so it demonstrates that the traditional approach which concentrates on the weight of the load is outmoded - weight is only one of the many factors that may influence the risk of injury.

The present proposals - Regulations

10 The present proposals build on the experience gained from the earlier consultation exercises and reflect the structure and intent of the European Directive. The Regulations (Annex 1) have been kept as short as possible and are expressed in positive terms, indicating clearly the measures to be taken and the sequence in which this should be done.

11 Reflecting Articles 3 and 4 of the Directive, regulation 4 sets out a simple hierarchy of steps:

- avoid hazardous manual handling operations where possible;
- assess any hazardous operations that cannot be avoided;
- remove or reduce the risk of injury, using the assessment as a basis for action.

12 At the first step a judgement should be made as to the likelihood of injury, on the basis of which it will be possible to exclude many tasks from further consideration. Among those that remain some may offer the opportunity of avoiding manual handling. Thus the second step - a more formal assessment of risk - can be focused on a limited number of manual handling operations. Once carried out, the assessment will simplify the third step by highlighting the factors contributing chiefly to any risk of injury.

13 The factors to be considered during the assessment, and relevant questions to ask, are set out in Schedule 1 to the Regulations. This is modelled closely on the factors listed in the two Annexes to the Directive. In making an assessment it is important to take account of the individual worker's capability to undertake manual handling. The employer therefore needs to be aware of factors affecting this. Regulation 5(b) is intended to address this need but in doing so places a significant duty on

the employee. Comments are invited on the most appropriate way of ensuring that the employer has the necessary information.

14 A decision must be made as to the lengths to which avoidance of hazardous manual handling should be pursued. Regulation 4 determines this by reference to what is reasonably practicable, the qualification most sought by respondents to the 1988 Consultative Document. Thus it is closely tied to accepted good practice in the relevant industry and is set at the point at which further improvements simply cannot be justified by the benefits that follow.

15 Similarly, at the third step, a decision must be made as to the extent to which the risk of injury should be reduced. Again the requirement is not open ended but sets the cut off at a point which it is reasonably practicable to achieve.

16 The measures necessary to remove or reduce the risk of injury will include, where appropriate, the provision of training and information as required by Article 6 of the Directive. In addition, regulation 4(1)(b)(iii) requires the provision, where appropriate, of the particular information specified in Article 6(1). The consultation of employees required by Article 7 is being addressed by the separate proposals to implement the Framework Directive 89/391/EEC.

17 The HSC is satisfied that Regulations structured in this way would form a satisfactory replacement for the largely ineffective existing statutory provisions, thereby maintaining or improving standards as required by section 1(2), HSW Act. Whereas the existing provisions concentrate on the weight of the load to be handled, the present proposals - like the Directive - embody the modern ergonomic approach to the control of manual handling injury in which the weight of the load is seen as just one of a number of important considerations.

18 The statutory provisions it is proposed to replace are listed in Schedule 2 to the Regulations. Unlike the other provisions listed there, section 18(1)(f) of the Children and Young Persons Act 1933 and section 28(1)(f) of the Children and Young Persons (Scotland) Act 1937 are not "relevant statutory provisions" under the HSW Act and consultation on their repeal is a matter for the Secretary of State for Employment rather than the HSC. The HSC will pass on to the Secretary of State any comments made on this aspect of the proposals.

19 Some of the repeals proposed in Schedule 2 would affect those who are office holders rather than employees, eg the police. Separate consideration will be given as to how the protection afforded to these groups will be continued.

20 The Regulations would apply to mines and quarries and to the offshore oil and gas industry. Other legislation spells out the

responsibilities of owners and managers in these industries. The Regulations are not intended to change the structure of duties relating to employers, owners or managers of mines, quarries or offshore installations; rather to be consistent with existing and other proposed legislation, particularly the proposals for safety cases and safety management systems for offshore installations on which the the HSC will issue a consultative document shortly. The HSC will give further attention to whether the Regulations need make any special provision for the allocation of duties in these industries and would welcome any comments by consultees.

The present proposals - Guidance

21 The guidance (Annex 2) sets out a broad, generally applicable approach to the assessment and control of risks from the manual handling of loads. It is also intended to form a basis for the development of more detailed guidance by individual industries or sectors where particular needs exist.

22 After interpreting key expressions in the Regulations the guidance explains the significance of the assessment factors and questions listed in Schedule 1 to the Regulations. A structured assessment will not only identify the level of risk of injury but also highlight problem areas and assist the identification of priorities for remedial action.

23 The guidance goes on to give a general outline of measures that can be applied to remove or reduce the risk of injury but this section in particular is necessarily of a general nature. It is here that the development of further, industry specific guidance is likely to be especially beneficial.

24 Reflecting the approach adopted in both the Directive and the Regulations, no attempt is made in the guidance to establish weight or other limits. However, in response to many requests, numerical guidelines are offered (Appendix 2) to assist with the assessment of risk. These use simple diagrams to bring together some of the more important assessment factors including the vertical and horizontal position of the load in relation to the handler's body. There is also simple guidance on the range of physical capabilities likely to be encountered across the working population.

25 It has been suggested that the guidance could usefully be accompanied by one or more checklists, especially with a view to simplifying the process of assessment in most cases. Views are invited on whether this would be helpful and if so the form such a checklist or checklists should take (Appendix 3). There might be particular value in specific industries developing checklists

for their own use, either as supplements to or in substitution for general checklists.

26 Consideration is also being given to the preparation of a small number of case studies. These could serve as worked examples, illustrating the assessment process and the particular remedial measures applied. Again, views are invited (Appendix 4) on the value of this approach, and whether such material would be more useful in the general guidance or in industry specific guidance.

Economic appraisal

27 The 1988 consultative document remarked on the difficulty of assessing the economic benefit from the prevention of manual handling injury, disablement and material damage, and the cost of such prevention; and it invited contributions to the economic appraisal. However, among the large volume of comment on the document as a whole very little was offered on economic aspects. Nevertheless the Health and Safety Executive (HSE) has managed to refine the economic appraisal to some extent, though for want of better data it remains less complete than might be wished.

28 The HSE finds that in 1988/89 27.5% of reported accidents involved manual handling. On the same basis as that used by the Department of Transport the estimated cost to the country of these accidents, including lost output, medical treatment and individual suffering exceeded £90 million. This is thought to be a major underestimate for a variety of reasons including substantial underreporting of non-fatal injuries (perhaps by as much as two thirds), and the exclusion of first aid only and damage only accidents from the requirement to report.

29 From recent research by the HSE into the costs of illness it is estimated that the total annual cost to the country of musculoskeletal disease among members of the working population exceeds £25 billion. The research also suggests that some 6% of visits to doctors by persons of working age because of illness are caused by occupational factors. If it is assumed that a similar percentage of musculoskeletal disease is occupationally related the cost of such disease caused by occupational factors would exceed £1.5 billion. This estimate does not include the costs of premature retirement or redeployment caused by illness.

30 It is estimated that in 1989 between 9 and 10 million people were employed in occupations likely to involve a significant amount of manual handling. The cost of carrying out risk assessments for manual handling is difficult to estimate. Where a number of employees carry out similar work, assessment on a

sample basis will suffice and the cost per employee will be small. If the work is repetitive the cost will be further reduced. For work that is unusual or varies greatly, the cost of assessment will be greater. A very wide range of costs seems likely, between a few pence and perhaps £25 per employee, though for most workers whose work involves only a small proportion of manual handling or tasks of low risk the assessment will probably be a minimal affair, of low cost. On this basis the total cost of risk assessments for all affected employees might lie between £30 and £50 million initially, with recurring costs of perhaps £3 to £5 million per year.

31 Apart from estimates provided by a small number of companies, chiefly in the brewing industry, very little information as to the likely cost of measures to avoid manual handling or reduce the risk of injury has been forthcoming. It is particularly difficult at present to build a picture that is representative of industry as a whole.

32 The benefits of implementing the proposed Regulations are difficult to predict. They would be likely to build gradually, as industry became increasingly aware of the problem and corrective measures were applied. By way of illustration, the somewhat conservative estimates set out above suggest that a 10% reduction in manual handling injury and illness would save the economy some £170 million per year.

33 From the information presently available it is not possible to come to a firm conclusion as to the net effect of the proposed Regulations. Large numbers of employees are potentially affected and some measures such as mechanisation can be expensive. However there will sometimes be productivity gains, and other cost effective measures will often be available. There are large potential cost savings from reducing injury, illness and damage to property. It is suggested that costs will not be grossly disproportionate to benefits.

34 Consultees are again invited to contribute to refinement of the economic appraisal. In particular, additional information is sought on:

- the extent of injury and ill health attributable to the manual handling of loads at work, and the costs thus caused; and

- the costs of putting the proposed Regulations into effect including the avoidance of manual handling, the assessment of risk, and measures to reduce the risk of injury such as the provision of equipment, improved systems of work and adequate information and training.

Summary

35 The manual handling of loads has long been recognised as a major source of occupational injury and ill health. Taken together, the advent of the European Directive and the coming to fruition of the HSC's efforts to develop a satisfactory strategy for manual handling provide the ideal opportunity to tackle this long standing problem to effect. The present proposals provide a structured approach through which risks can be identified and corrective measures applied, with the aim of bringing about a significant reduction in the toll of injury and disablement caused by manual handling in the workplace.

DRAFT MANUAL HANDLING OPERATIONS REGULATIONS 199-

Draft proposals for Regulations to be made under sections 15(1), (2), (3)(a), (5)(a) and (9) [and 80(1)] of, and paragraphs 1(1)(a) and (c) and 8 of Schedule 3 to, the Health and Safety at Work etc. Act 1974[a] ("the 1974 Act").

Citation and commencement

1. These Regulations may be cited as the Manual Handling Operations Regulations 199- and shall come into force on [date] 199-.

Interpretation

2. -(1) In these Regulations, unless the context otherwise requires -

"injury" does not include injury resulting from the condition or properties of a load, other than injury resulting from the weight, shape, size, external state, rigidity or lack of rigidity of a load or from the movement of its contents, and "injured" shall be construed accordingly;

"load" includes any person and any animal;

"manual handling operations" means any transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or by bodily force.

(a) 1974 c.37; sections 15 and 50 were amended by the Employment Protection Act 1975 (c.71), Schedule 15, paragraphs 6 and 16 respectively.

(2) Any duty imposed by these Regulations on an employer in respect of his employees shall also be imposed on a self-employed person in respect of himself.

Disapplication of duties

3. Any duty imposed by these Regulations shall not apply in relation to -

(a) the master or crew of a sea-going ship or to the employer of such persons, in respect of the normal ship-board activities of a ship's crew under the direction of the master; or

(b) the crew of any aircraft or hovercraft which is moving under its own power or any other person on board any such aircraft or hovercraft who is at work in connection with its operation.

Duties of employers

4. -(1) Each employer shall -

(a) so far as is reasonably practicable, avoid the need for his employees to undertake any manual handling operations which involve a risk of their being injured; or

(b) where it is not reasonably practicable to avoid the need for his employees to undertake any manual handling operations which involve a risk of their being injured -

(i) make a suitable and sufficient assessment of all such manual handling operations to be undertaken by them, having regard to the factors which are specified in column 1 of Schedule 1 to these Regulations and considering the questions which are specified opposite thereto in column 2 of that Schedule,

(ii) take appropriate steps to reduce the risk of injury to those employees arising out of their undertaking any such manual handling operations to the lowest level reasonably practicable, and

(iii) take appropriate steps to provide any of those employees who are undertaking any such manual handling operations with general indications and, where it is reasonably practicable to do so, precise information on -

(aa) the weight of each load, and

(bb) the heaviest side of any load whose centre of gravity is not positioned centrally.

(2) The assessment of manual handling operations required by paragraph (1) of this regulation shall be reviewed by the employer concerned when -

(a) there is reason to suspect that the assessment is no longer valid; or

(b) there has been a significant change in the manual handling operations to which the assessment relates;

and the employer shall make such changes to the assessment as are appropriate in the light of the review.

Duties of employees

5. Each employee shall -

(a) make full and proper use of any equipment or system of work provided to him by his employer in compliance with regulation 4(1)(b)(ii) of these Regulations; and

(b) inform his employer about any physical condition suffered by him which might reasonably be considered to affect his ability to undertake manual handling operations safely.

Exemption certificates

6. -(1) The Secretary of State for Defence may, in the interests of national security, exempt -

(a) any of the home forces, any visiting force or any headquarters from any requirement imposed by regulation 4 of these Regulations; or

(b) any member of the home forces, any member of a visiting force or any member of a headquarters from the requirement imposed by regulation 5(b) of these Regulations;

and any exemption such as is specified in sub-paragraph (a) or (b) of this paragraph may be granted subject to conditions and to a limit of time and may be revoked at any time by the Secretary of State for Defence in writing.

(2) In this regulation -

(a) "the home forces" has the same meaning as in section 12(1) of the Visiting Forces Act 1952(a);

(b) "visiting force" and "headquarters" have the meanings respectively assigned thereto by Article 3(2) of the Visiting Forces and International Headquarters (Application of Law) Order 1965(b); and

(c) a person shall be regarded as a member of a headquarters where he is a civilian member of a headquarters or a military member of a headquarters (within in either case the meaning assigned thereto by paragraph 1 of the Schedule to the International Headquarters and Defence Organisations Act 1964)[a].

(a) 1952 c.67.
(b) S.I. 1965/1536, to which there are amendments not relevant to these Regulations.

Extension outside Great Britain

7. These Regulations shall, subject to regulation 3 hereof, apply to and in relation to the premises and activities outside Great Britain to which sections 1 to 59 and 80 to 82 of the Health and Safety at Work etc. Act 1974 apply by virtue of the Health and Safety at Work etc. Act 1974 (Application Outside Great Britain) Order 1989[b] as they apply within Great Britain.

Repeals and revocations

8. -(1) The enactments mentioned in column 1 of Part I of Schedule 2 to these Regulations are repealed to the extent specified in the corresponding entry in column 3.

(2) The Regulations mentioned in column 1 of Part II of Schedule 2 to these Regulations are revoked to the extent specified in the corresponding entry in column 3.

(a) 1964 c.5.
(b) S.I. 1989/840.

SCHEDULE 1 Regulation 4(1)(b)(i)

FACTORS TO WHICH THE EMPLOYER MUST HAVE REGARD AND QUESTIONS HE MUST CONSIDER WHEN MAKING AN ASSESSMENT OF MANUAL HANDLING OPERATIONS

Column 1 Factors	Column 2 Questions
1. The task	Does it involve:
	- holding load at distance from trunk?
	- unsatisfactory bodily movement or posture, especially:
	- twisting the trunk?
	- stooping?
	- excessive movement of load, especially:
	- excessive lifting or lowering distances?
	- excessive carrying distances?
	- excessive pushing or pulling distances?
	- risk of sudden movement of load?
	- frequent or prolonged physical effort?
	- insufficient rest or recovery periods?
2. The load	Is it:
	- heavy?
	- bulky or unwieldy?
	- difficult to grasp?
	- unstable, or with contents likely to shift?
	- sharp, hot or otherwise potentially damaging?

Column 1 Factors	Column 2 Questions
The working environment	Are there: - space constraints preventing good posture? - uneven, slippery or unstable floors? - variations in level of floors or work surfaces? - extremes of temperature, humidity or air movement? - poor lighting conditions?
Individual capability	Does the job: - require unusual strength, height, etc? - create a hazard to those who are pregnant or have a health problem? - require special knowledge or training for its safe performance?

SCHEDULE 2

Regulation 8

REPEALS AND REVOCATIONS

PART I

REPEALS

Column 1 Short title	Column 2 Chapter	Column 3 Extent of repeal
[The Children and Young Persons Act 1933.	1933 c.12.	Section 18(1)(f).]
[The Children and Young Persons (Scotland) Act 1937.	1937 c.37.	Section 28(1)(f).]
The Mines and Quarries Act 1954.	1954 c.70.	Section 93; in section 115 the word "ninety-three".
The Agriculture (Safety Health and Welfare Provisions) Act 1956.	1956 c.49.	Section 2.
The Factories Act 1961.	1961 c.34.	Section 72(1).
The Offices, Shops and Railway Premises Act 1963.	1963 c.41.	Section 23(1); in section 63(2) the number "23"; in section 83(1) the number "23".

PART II
REVOCATIONS

Column 1 Title of instrument	Column 2 Reference	Column 3 Extent of revocation
The Agriculture (Lifting of Heavy Weights) Regulations 1959.	S.I. 1959/2120.	The whole Regulations.
The Construction (General Provisions) Regulations 1961.	S.I. 1961/1580.	In regulation 3(1)(a) the phrase "and 55"; regulation 55.

15 October 1991

DRAFT

H S E
Health & Safety
Executive

Manual handling of loads

A guide to the Manual Handling Operations Regulations 199-

GUIDANCE
ON REGULATIONS

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Flow chart – How to follow the Regulations

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- Definitions of "injury", "load", "manual handling operations"
- Duties of the self-employed

Regulation 3 **Disapplication of duties**
- Ships, aircraft and hovercraft

Regulation 4: Duties of employers –

Regulation 4(1)(a) **Avoidance of manual handling**
- Hierarchy of measures
- Elimination of handling
- Automation or mechanisation
- Risk of injury

Regulation 4(1)(b)(i) **Assessment of risk**
- Introduction to assessment
- The form of assessment
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- Work away from the employer's premises
- Who should carry out the assessment?
- Employees' contribution
- Records of accidents and ill-health
- Industry-specific data
- Assessing an operation:
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Regulation 4(1)(b)(ii) **Reducing the risk of injury**
- Striking a balance
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  - Improving the working environment
  - Individual capability
- Knowledge and training

Regulation 4(1)(b)(iii) **The load – information and training**

Regulation 4(2) **Reviewing the assessment**

Regulation 5	**Duties of employees**
Regulation 6	**Exemption certificates**
Regulation 7	**Extension outside Great Britain**
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Appendix 1:	**Further sources of information** The EC Directive on manual handling HSE publications HSE leaflets Other publications Ergonomics practitioners and consultants Examples of industry-specific guidance Relevant standards Other legislation
Appendix 2:	**Numerical guidelines for assessment** Lifting and lowering Carrying Pushing and pulling Handling while seated
Appendix 3:	**Checklists** Checklists might cover: Initial appraisal Assessment of risk Reducing the risk [would these be helpful?]
Appendix 4:	**Case studies** A small number of worked examples might be provided [would these be helpful?]
Appendix 5:	**The Manual Handling Operations Regulations 199-** [full text] [would this be helpful?]

INTRODUCTION

1   This booklet gives general guidance on the Manual Handling Operations Regulations 199- (the Regulations) which came into force on [date]. The Regulations are made under the Health and Safety at Work etc Act 1974 (the HSW Act). They implement European Directive 90/269/EEC on the manual handling of loads (see Appendix 1), supplement the general duties placed upon employers and others by the HSW Act and replace a number of earlier, outdated legal provisions. [The Regulations are reproduced in full at Appendix 5.]

2   More than a quarter of the accidents reported each year to the enforcing authorities are associated with **manual handling** - the transporting or supporting of loads by hand or by bodily force. While fatal manual handling accidents are rare, accidents resulting in a major injury such as a fractured arm are more common, accounting for 7% of all major injuries reported in 1988/89. The vast majority of reported manual handling accidents result in over 3 day injury, most commonly a sprain or strain, often of the back.

3   Figures 1 to 3 illustrate these patterns for over 3 day injuries reported in 1988/89. Sprains and strains arise from the incorrect application and/or prolongation of bodily force. Poor posture and excessive repetition of movement can be important factors in their onset. It is sometimes not appreciated that many manual handling injuries are cumulative rather than being truly attributable to any single handling incident.

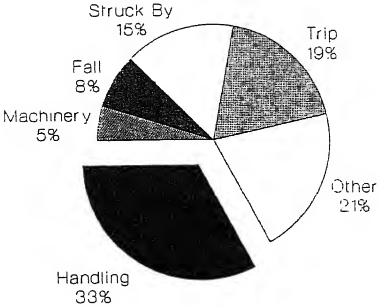


Figure 1 Kinds of accident causing injury

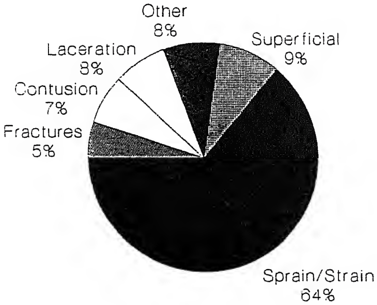


Figure 2 Types of injury caused by handling accidents

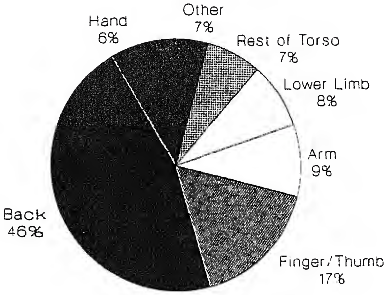


Figure 3 Sites of injuries caused by handling

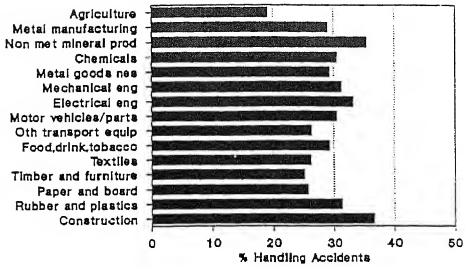


Figure 4 Percentage of injuries caused by handling

4 Figure 4, also based on over 3 day injuries, shows that the problem of manual handling is not confined to a narrow range of industries but is widespread. Nor should it be supposed that the problem is confined to "industrial" work: for example the comparable figure for banking and finance is 24%, for retail distribution 26% and for medical, veterinary and other health services 51%.

5 This guidance, like the Regulations it supports, is concerned with the manual handling of loads. It does not address **upper limb disorders**, such as tenosynovitis, which characteristically affect tendons and other soft tissues. While there is no sharp dividing line, manual handling injuries tend to involve substantial forces and gross bodily movement whereas upper limb disorders typically arise from lower forces but higher repetition rates or the maintenance of awkward or static postures. See also the Health and Safety Executive (HSE) booklet Work related upper limb disorders - a guide to prevention (full reference at Appendix 1).

6 There is now substantial international acceptance of both the scale of the manual handling problem and methods of prevention. Modern medical and scientific knowledge stresses the importance of an **ergonomic approach** in removing or reducing the risk of manual handling injury. The ergonomic approach looks at manual handling as a whole, taking into account a range of relevant factors including the nature of the task, the load, the working environment and individual capability. This approach is central to the European Directive on manual handling.

7 This booklet is intended to assist the application of this modern preventive approach to the practical environment of the workplace. It offers a structured approach to compliance with the Regulations based on sound ergonomic principles, that is by seeking to fit the task to the person rather than making the person conform unnaturally to the task.

8 The Regulations establish a clear **hierarchy of measures:**

(a) avoid hazardous manual handling operations so far as is reasonably practicable - this may be done by redesigning the task to avoid moving the load or by automating or mechanising the process;

(b) make a suitable and sufficient assessment of any hazardous manual handling operations that cannot be avoided; and

(c) reduce the risk of injury so far as is reasonably practicable - particular consideration should be given to the provision of mechanical assistance but where this is not reasonably practicable then other improvements to the task, the load and the working environment should be explored.

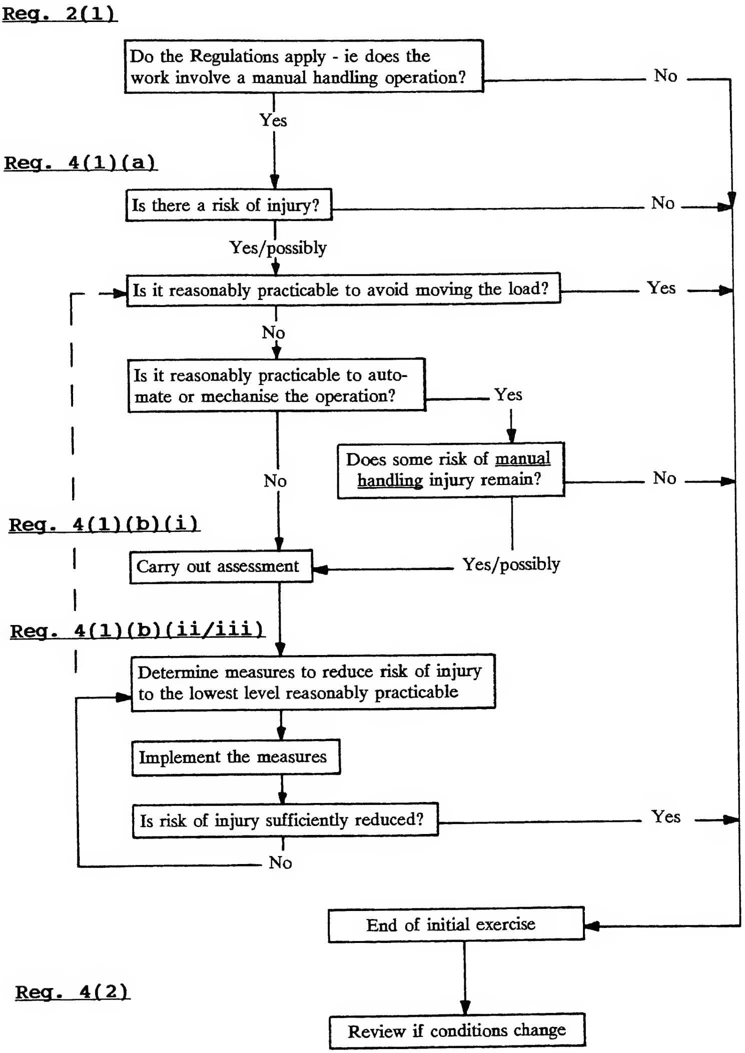
9 Like the European Directive on manual handling, the Regulations set no specific requirements such as **weight limits.** The ergonomic approach shows clearly that such requirements are based on too simple a view of the problem and are likely to lead to erroneous conclusions. Instead, an assessment based on a range of relevant factors is used to determine the risk of injury and point the way to remedial action. However, a full assessment of every manual handling operation could be a major undertaking and might involve wasted effort.

10 Therefore numerical guidelines have been provided (see Appendix 2) setting out an approximate boundary within which manual handling operations are unlikely to create a risk of injury sufficient to warrant more detailed assessment. This should enable assessment work to be concentrated where it is most needed. Even operations lying within the boundary should be avoided or made less demanding wherever it is reasonably practicable to do so. **The guidelines should not be regarded as precise recommendations and should be applied with caution, noting particularly the assumptions on which they are based.**

11 It is intended that the contents of this booklet should form a general framework within which individual industries and sectors will be able to produce **more specific guidance** appropriate to their own circumstances.

FLOW CHART

How to follow the Manual Handling Operations Regulations 199-:


Reg. 2(1)
Do the Regulations apply - ie does the work involve a manual handling operation?
Yes
No
Reg. 4(1)(a)
Is there a risk of injury?
No
Yes/possibly
Is it reasonably practicable to avoid moving the load?
Yes
No
Is it reasonably practicable to automate or mechanise the operation?
Yes
Does some risk of manual handling injury remain?
No
No
Yes/possibly
Reg. 4(1)(b)(i)
Carry out assessment
Reg. 4(1)(b)(ii/iii)
Determine measures to reduce risk of injury to the lowest level reasonably practicable
Implement the measures
Is risk of injury sufficiently reduced?
Yes
No
End of initial exercise
Reg. 4(2)
Review if conditions change

GUIDANCE ON THE REGULATIONS

Regulation 1 Citation and commencement

These Regulations may be cited as the Manual Handling Operations Regulations 199- and shall come into force on [date] 199-.

Regulation 2(1) Definitions of certain terms

In these Regulations, unless the context otherwise requires -

"injury" does not include injury resulting from the condition or properties of a load, other than injury resulting from the weight, shape, size, external state, rigidity or lack of rigidity of a load or from the movement of its contents, and "injured" shall be construed accordingly;

"load" includes any person and any animal;

"manual handling operations" means any transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or by bodily force.

Injury

12 The Regulations seek to prevent injury to any part of the body. Account should be taken of any external properties of the load which might either affect grip or cause direct injury, for example slipperiness, roughness, sharp edges, extremes of temperature. Hazards from the contents of a load, for example through spillage or leakage of corrosive material or from external contamination, are not covered by these Regulations, though such hazards should be considered in in the light of other provisions such as the Control of Substances Hazardous to Health Regulations 1988 (COSHH).

Load

13 A load in this context must be a discrete movable object. This includes, for example, a human patient receiving medical attention or an animal during husbandry or undergoing veterinary treatment, and material supported on a shovel or fork. An implement, tool or machine is not considered to constitute a load while in use for its intended purpose.

Manual handling operations

14 The Regulations apply to the **manual** handling of loads, ie by human effort, as opposed to mechanical handling by crane, lift truck, etc. The human effort may be applied directly to the load, or indirectly by hauling on a rope or pulling on a lever. Introducing mechanical assistance, eg a sack truck or a powered hoist, may reduce but not eliminate manual handling since human effort is still required to move, steady or position the load.

15 Manual handling includes both transporting a load and supporting a load in a static posture. The load may be moved or supported by the hands or any other part of the body, for example the shoulder. Manual handling also includes the intentional dropping of a load and the throwing of a load, whether into a receptacle or from one person to another.

16 The application of human effort for a purpose other than transporting or supporting a load does not constitute a manual handling operation. For example operating the starting handle of an engine or a control lever on a machine is not manual handling; nor is the action of pulling on a rope while lashing down cargo on the back of a vehicle.

Regulation 2(2) Duties of the self-employed

Any duty imposed by these Regulations on an employer in respect of his employees shall also be imposed on a self-employed person in respect of himself.

Duties of the self-employed

17 Regulation 2(2) makes the **self-employed** responsible for their own safety during manual handling. They should take the same steps to safeguard themselves as would be expected of an employer in protecting his employees in similar circumstances.

Regulation 3 Disapplication of duties

Any duty imposed by these Regulations shall not apply in relation to -

(a) the master or crew of a sea-going ship or to the employer of such persons, in respect of the normal ship-board activities of a ship's crew under the direction of the master; or

(b) the crew of any aircraft or hovercraft which is moving under its own power or any other person on board any such aircraft or hovercraft who is at work in connection with its operation.

Ships, aircraft and hovercraft

18 Sea-going ships are subject to other legislation administered by the Department of Transport giving protection to persons on board. The Regulations therefore do not apply to the normal ship-board activities of a ship's crew under the direction of the master. However the Regulations may apply to other work activities, for example where a shore-based contractor carries out work aboard a ship. That person's activities will be subject to the Regulations within territorial waters as provided for under regulation 7.

19 For similar reasons the Regulations do not apply to activities aboard an aircraft or hovercraft which is moving under its own power.

Regulation 4: Duties of employers -

Regulation 4(1)(a) Avoidance of manual handling

> Each employer shall - so far as is reasonably practicable, avoid the need for his employees to undertake any manual handling operations which involve a risk of their being injured....

Hierarchy of measures

20 Regulation 4(1) establishes a clear hierarchy of measures: avoid hazardous manual handling operations so far as is reasonably practicable; assess any hazardous manual handling operations that cannot be avoided; and reduce the risk of injury so far as is reasonably practicable. Regulation 4(1)(a) addresses the first of these measures and can itself be broken down, as follows.

Elimination of handling

21 Where a risk of injury from a manual handling operation is identified the first question to ask is whether the operation can be eliminated altogether: is the handling operation unnecessary; or could the desired result be achieved in some entirely different way? For example, can a process such as machining or wrapping be carried out in situ, without handling the load? Can a treatment be brought to a hospital patient rather than taking the patient to the treatment?

Automation or mechanisation

22 Secondly, if a load handling operation, in some form, cannot be avoided entirely then further questions should be asked:

(a) can the operation be automated?
(b) can the operation be mechanised?

23 It should be remembered that the introduction of automation or mechanisation may create other, different risks. Even an automated plant will require maintenance and repair. Mechanisation, for example by the introduction of lift trucks or powered conveyors, can introduce fresh risks requiring precautions of their own.

24 It is especially important to address these questions when plant or systems of work are being designed. However, examination of existing activities may also reveal opportunities for avoidance of manual handling operations that involve a risk of injury. Such improvements often bring additional benefits in

terms of greater efficiency and productivity, and reduced damage to loads.

Risk of injury

25 What is required at this stage is not a detailed assessment but an initial appraisal of whether the manual handling operation involves a risk that cannot be dismissed as trivial. The most useful tools at this stage are a grasp of the basic principles of safety in manual handling supplemented, where possible, with knowledge of past experience in the company or industry concerned. Appendix 2 provides some simple numerical guidelines to assist with this initial judgement, at least in relatively straightforward cases.

Regulation 4(1)(b)(i) Assessment of risk

> Each employer shall - where it is not reasonably practicable to avoid the need for his employees to undertake any manual handling operations which involve a risk of their being injured -
>
> (i) make a suitable and sufficient assessment of all such manual handling operations to be undertaken by them, having regard to the factors which are specified in column 1 of Schedule 1 to these Regulations and considering the questions which are specified opposite thereto in column 2 of that Schedule....

Introduction to assessment

26 Schedule 1 to the Regulations [see Appendix 5] specifies four factors which the assessment should take into account: the **task**, the **load**, the **working environment** and **individual capability**. First, however, consideration should be given to how the assessment is to be be carried out - and by whom - and what other relevant information may be available to help.

The form of assessment

27 In general, to be suitable and sufficient the assessment should be recorded. It should be kept, readily accessible, as long as it remains relevant. However, the assessment need not be recorded if:

(a) it could very easily be repeated and explained at any time because it is simple and obvious; or

(b) the manual handling operation is quite straightforward and of low risk, is going to last only a very short time, and the time taken to record it would be disproportionate.

28 Where manual handling is carried out on a significant scale employers of five or more employees should outline their general policy and arrangements for manual handling as part of, or in association with, their written policy on health and safety as required by section 2(3) of the HSW Act.

Varied work

29 Not all manual handling operations arise in the course of routine, unvarying work. For example, maintenance work can involve a wide variety of tasks. Work in construction or agriculture can be varied both in itself and in the circumstances in which it is performed.

30 In such cases it will often be quite unrealistic to attempt to assess every single instance of manual handling. Instead, the assessment should identify each type or category of manual handling operation likely to be encountered and establish the range of risks that each creates, so that appropriate remedial measures can be determined on this broader basis.

Work away from the employer's premises

31 The Regulations impose duties upon the employer whose employees carry out the manual handling. However, manual handling operations may occur away from the employer's premises in situations over which little direct control can be exercised. Where possible the employer should seek close liaison with those in control of such premises. There will sometimes be a limit to employers' ability to influence the working environment; but the task and perhaps the load will often remain within their control, as will the provision of effective training, so that they can nevertheless establish a safe system of work.

32 In the case of delivery operations, for example, a useful technique is to list the various types of task, load and working environment concerned and then to review a selection of them. The aim should be to establish the range of manual handling risks to which employees are exposed, and then to decide on appropriate preventive measures where these are shown to be necessary.

33 Persons in control of premises at which visiting employees have to work may also have duties towards those employees, particularly under sections 3 or 4 of the HSW Act or [the Workplace (Health, Safety and Welfare) Regulations 199-], for example to ensure that the premises and plant provided there are in a safe condition.

Who should carry out the assessment?

34 In most cases employers should be able to carry out the assessment themselves or delegate it to others in their organisation. A meaningful assessment can only be based on a thorough practical understanding of the type of manual handling tasks to be performed, the loads to be handled and the working environment in which the tasks will be carried out. Employers and managers should be better placed to know about the manual handling taking place in their own organisation than someone from outside.

35 Those carrying out an assessment should be familiar with the main requirements of the Regulations, have read and understood this guidance booklet and have the ability to:

(a) observe and appreciate the significance of manual handling operations, including possible departures from observed practice;
(b) seek out additional information where necessary;
(c) draw the information together in a systematic way;
(d) form valid and justifiable conclusions as to the risk of injury;
(e) make a clear record of the assessment in all but simple cases, and communicate its findings to those who need to know; and
(f) recognise their own limitations so that the knowledge or skills of others can be called in if necessary.

36 It may be appropriate to seek outside assistance, for example where manual handling risks are novel or particularly difficult to assess. Outside specialist advice may also help solve unusual handling problems or contribute to ergonomic design. But employers will still wish to oversee the assessment since the final responsibility for it remains theirs.

37 Appendix 2 offers some simple numerical guidelines to assist with assessment, at least to the extent of providing a starting point in relatively straightforward cases.

Employees' contribution

38 The views of staff can be of particular value in identifying manual handling problems. Employees and their safety representatives should be encouraged to play a full part in the assessment process, in particular by reporting any problems experienced with manual handling operations.

Records of accidents and ill-health

39 These can be a valuable indicator of risk. They should identify accidents associated with manual handling, and careful analysis may also yield evidence of links between manual handling and ill-health, including injuries apparently unrelated to any specific event or accident. Other possible indicators of manual handling problems include high levels of absenteeism or staff turnover, poor productivity and morale, excessive product damage, and general dissatisfaction among the employees concerned. Any regular occurrence of back disorders or other ailments possibly associated with unsatisfactory manual handling practices should be investigated.

Industry-specific data

40 Individual industries and sectors have a valuable role to play in identifying common manual handling problems. Industry associations and similar bodies can also act as a focus for the

collection and analysis of accident and ill-health data drawn from a far wider base than that available to the individual employer.

Assessing an operation

41 When a manual handling operation involves a risk of injury and avoidance of the operation is not reasonably practicable an assessment should be made, having regard to the factors listed in Schedule 1 to the Regulations (see Appendix 5). The factors are grouped under four headings: the **task**; the **load**; the **working environment**; and **individual capability**.

42 These categories are clearly interrelated: each may influence the others and therefore none can be considered in isolation. However, in order to carry out an assessment in a structured way it is often helpful to begin by breaking the operation down into separate, more manageable items.

THE TASK - Making an assessment

Is the load held at a distance from the trunk?

43 As the load is moved away from the trunk the general level of stress on the lower back rises. Regardless of the handling technique used, failure to keep the load close to the body will increase the stress. For example, as a rough guide holding a load at arms length reduces safe capacity by about 80% compared with holding a load close to the body.

44 In addition, the further away the load, the less easy it is to counterbalance it with the weight of the body. Moreover the benefit of friction between the load and the worker's garments in helping to support or steady the load is reduced or lost.

The importance of posture

45 Poor posture during manual handling introduces the additional risk of loss of control of the load and a sudden, unpredictable increase in physical stresses. The risk of injury is increased if the feet and hands are not well placed to transmit forces efficiently between the floor and the load. A typical example of this is when the body weight is forward on the toes, the heels are off the ground and the feet are too close together.

Does the task involve twisting the trunk?

46 Stress on the lower back is increased significantly if twisted trunk postures are adopted. Still worse is to twist while supporting a load. As a rough guide twisting through 30° reduces safe capacity by about 10%, through 60° by about 15% and through 90° by about 20%.

[explanatory diagram to be inserted]

Does the task involve stooping?

47 As an approximate guide stooping through 20° reduces safe capacity by about 25%, through 45° by about 35% and through 90° by about 50%. This can happen whether the handler stoops by bending the back or by leaning forwards with the back straight - in each case the angle of stoop is the extent to which a line drawn through the shoulders and the base of the spine departs from the vertical.

[explanatory diagram to be inserted]

The effect of combining risk factors

48 Safe capacity can be reduced very substantially if twisting is combined with stooping or stretching. Such combinations should be avoided wherever possible, especially since their effect on safe capacity can be greater than simple addition of their individual effects might suggest. A requirement to position the load with precision can also add to the risk of injury.

Does the task involve excessive lifting or lowering distances?

49 Stresses are increased when loads are handled at extremes of vertical movement. For example, when lifting box-like loads, heights between mid-thigh and waist are most suitable, followed by lifting between waist and shoulder height. Lifting or lowering outside these ranges is likely to increase the risk of injury.

50 The distance through which a load is lifted or lowered is also important: large distances are considerably more demanding physically than small ones. Moreover lifting or lowering through a large distance is likely to necessitate a change of grip part way, further increasing the risk of injury. Lifts commencing at floor level should be avoided where possible; and where unavoidable they should preferably terminate no higher than waist height.

Does the task involve excessive carrying distances?

51 In general if a load can safely be lifted and lowered it can also be carried without endangering the back. However if a load is carried for an excessive distance physical stresses are prolonged leading to fatigue and increased risk of injury. As a rough guide if a load is carried further than about 10 metres then the physical demands of carrying the load will tend to predominate over those of lifting and lowering and safe capacity will be reduced.

Does the task involve excessive pushing or pulling of the load?

52 Like lifting, lowering and carrying, the pushing or pulling of a load can be injurious to the handler. The risk of injury is

increased if pushing or pulling is carried out with the hands much below waist height or above shoulder height.

53 In addition, however, because of the way in which pushing and pulling forces have to be transmitted from the handler's feet to the floor, the risk of slipping and consequent injury is much greater. For this reason pushing or pulling a load in circumstances where the grip between foot and floor is poor - whether through the condition of the floor, footwear or both - is likely to increase significantly the risk of injury.

Does the task involve a risk of sudden movement of the load?

54 If a load suddenly becomes free and the handler is unprepared or is not able to retain complete control of the load, sudden unpredictable stresses can be imposed on the body creating a risk of injury. For example, the freeing of a box jammed on a shelf or the release of a machine component during maintenance work can easily cause injury if handling conditions are not ideal. The risk is compounded if the handler's posture is unstable.

Does the task involve frequent or prolonged physical effort?

55 The frequency with which a load is handled can affect the risk of injury. A quite modest load, handled very frequently, can create as large a risk of injury as one-off handling of a more substantial load. The effect will be worsened by jerky, hurried movements which can multiply a load's effect on the body.

56 Where physical stresses are prolonged fatigue will occur, increasing the risk of injury. This effect will often be exacerbated by a relatively fixed posture, leading to a rapid increase in fatigue and a corresponding fall in muscular efficiency.

Does the task involve insufficient rest or recovery periods?

57 Research and experience in industry have shown that insufficient rest during physically demanding work increases ill-health and reduces output. The amount of work undertaken in fixed postures is also an important consideration since blood flow to the muscles is likely to be reduced, adding to fatigue. This problem is complicated by a large variation in individual susceptibility to fatigue.

Handling while seated

58 Handling loads while seated imposes considerable constraints. Use of the relatively powerful leg muscles is precluded and the weight of the handler's body cannot be used as a counterbalance. Therefore most of the work has to be done by the weaker muscles of the upper limbs.

59 Unless the load is presented close to the body the handler will have to reach and/or lean forward. Not only will handling

in this position put the body under additional stress but the seat, unless fixed in place, will then tend to move backwards as the handler attempts to maintain a stable posture.

60 Lifting from below the level of a work surface will almost inevitably result in twisting and stooping, the dangers of which were discussed in paragraphs 46 to 48.

Team handling

61 Handling by two or more people may make possible an operation that is beyond the capacity of one person, or reduce the risk of injury to a solo handler. However, team handling may introduce additional problems which the assessment should consider. During the handling operation the proportion of the load that is borne by each member of the team will inevitably vary to some extent. Such variation is likely to be more pronounced on rough ground. Therefore the load that a team can handle in safety is less than the sum of the loads that the individual team members could cope with when working alone.

62 As an approximate guide the safe capacity of a two person team is two thirds of the sum of their individual capacities; and for a three person team the safe capacity is half the sum of their individual capacities. If steps or slopes must be negotiated most of the weight may be borne by the handler or handlers at the lower end, further reducing safe capacity.

63 Additional difficulties may arise if team members impede each others' vision or movement. This can occur particularly with compact loads which force the handlers to work close together. Such loads may also cause difficulty by offering an insufficient number of good handholds.

THE LOAD - Making an assessment

Is the load heavy?

64 For many years legislation and guidance on manual handling have concentrated on the weight of the load. It is now well established that the weight of the load is only one - and sometimes not the main - consideration affecting the risk of injury. Other features of the load such as its resistance to movement, its size, shape or rigidity must also be considered. Proper account must also be taken of the circumstances in which the load is handled; for example postural requirements, frequency and duration of handling, workplace design, and aspects of work organisation such as incentive schemes and piecework.

65 Moreover traditional guidance based on so-called "acceptable" weights has often considered only symmetrical, two-handed lifts, in front of and close to the body. In reality such lifting tasks are comparatively rare since most will involve sideways movement, twisting of the trunk or some other asymmetry. For

these reasons an approach to manual handling which concentrates solely upon the weight of the load is likely to be misleading, either failing adequately to deal with the risk of injury or imposing excessively cautious constraints.

66 The numerical guidelines in Appendix 2 consider the weight of the load in relation to some of the other relevant factors.

Is the load bulky or unwieldy?

67 The shape of a load will affect the way in which it can be held. For example, the risk of injury will be increased if a load to be lifted from the ground is not small enough to pass between the knees, since its bulk will hinder a close approach. Similarly if the bottom front corners of a load are not within reach when carried at waist height a good grip will be harder to obtain. And if a load to be carried at the side of the body does not clear the ground without requiring the handler to lean away from the load in order to raise it high enough, the handler will be forced into an unfavourable posture.

68 In general if any dimension of the load exceeds about 75 cm its handling is likely to pose an increased risk of injury. This will be especially so if this size is exceeded in more than one dimension. The risk will be further increased if the load does not provide convenient handholds.

69 The bulk of the load can also interfere with vision. Where restriction of view by a bulky load cannot be avoided account should be taken of the increased risk of slipping, tripping, falling or colliding with obstructions.

70 The risk of injury will also be increased if the load is unwieldy and difficult to control. Well-balanced lifting may be difficult to achieve, the load may hit obstructions, or it may be affected by gusts of wind or other sudden air movements.

71 If the centre of gravity of the load is not positioned centrally within the load, inappropriate handling may increase the risk of injury. For example, much of the weight of a typewriter is often at the rear of the machine; therefore an attempt to lift the typewriter from the front will place its centre of gravity further from the handler's body than if the typewriter is first turned around and then lifted from the rear.

72 Sometimes, as with a sealed and unmarked carton, an offset centre of gravity is not visibly apparent. In these circumstances the risk of injury is increased since the handler may unwittingly hold the load with its centre of gravity further from the body than is necessary.

Is the load difficult to grasp?

73 If the load is difficult to grasp, for example because it is

large, rounded, smooth, wet, slippery or greasy, its handling will call for extra grip strength - which is fatiguing - and will probably entail inadvertent changes of posture. There will also be a greater risk of dropping the load. Handling will be less sure and the risk of injury will be increased.

Is the load unstable, or are its contents likely to shift?

74 If the load is unstable, for example because it lacks rigidity or has contents that are liable to shift, the likelihood of injury is increased. The stresses arising during the manual handling of such a load are less predictable, and the instability may impose sudden additional stresses for which the handler is not prepared. The risks are further increased if the handler is unfamiliar with a particular load and there is no cautionary marking on it.

75 Handling people or animals, for example hospital patients or livestock, can present additional problems. The load lacks rigidity, there is particular concern on the part of the handler to avoid damaging the load, and to complicate matters the load will often have a mind of its own, introducing an extra element of unpredictability. These factors are likely to increase the risk of injury to the handler as compared with the handling of an inanimate load of similar weight and shape.

Is the load sharp, hot or otherwise potentially damaging?

76 Risk of injury may also arise from the external state of the load. It may have sharp edges or rough surfaces, or be too hot or too cold to touch safely without protective clothing. In addition to the more obvious risk of direct injury, such characteristics may also impair grip, discourage good posture or otherwise interfere with safe handling.

THE WORKING ENVIRONMENT - Making an assessment

Are there space constraints preventing good posture?

77 If the working environment hinders the adoption of good posture, the risk of injury from manual handling will be increased. Restricted head room will enforce a stooping posture; furniture, fixtures or other obstructions may increase the need for twisting or leaning; constricted working areas and narrow gangways will hinder the manoeuvring of bulky loads.

Are there uneven, slippery or unstable floors?

78 In addition to increasing the likelihood of slips, trips and falls, uneven or slippery floors hinder smooth movement and create additional unpredictability. Floors which are unstable or susceptible to movement - for example on a boat, a moving train or a mobile work platform - similarly increase the risk of injury through the imposition of sudden, unpredictable stresses.

Are there variations in level of floors or work surfaces?

79 The presence of steps, steep slopes, etc can increase the risk of injury by adding to the complexity of movement when handling loads. Carrying a load up or down a ladder, if it cannot be avoided, is likely to aggravate handling problems because of the additional need to maintain a proper hold on the ladder.

80 Excessive variation between the heights of working surfaces, storage shelving, etc will increase the range of movement and in consequence the scope for injury. This will be especially so if the variation is large and requires, for example, movement of the load from near floor level to head height or beyond.

Are there extremes of temperature, humidity or air movement?

81 The risk of injury during manual handling will be increased by extreme thermal conditions. For example, high temperatures or humidity can cause rapid fatigue; and perspiration on the hands may reduce grip. Work at low temperatures may impair dexterity. Gloves and other protective clothing which may be necessary in such circumstances may also hinder movement, impair dexterity and reduce grip. The influence of air movement on working temperatures - the wind chill factor - should not be overlooked.

Are there poor lighting conditions?

82 Poor lighting conditions can increase the risk of injury. Dimness or glare may cause poor posture, eg by encouraging stooping. Contrast between areas of bright light and deep shadow can aggravate tripping hazards and hinder the accurate judgement of height and distance.

INDIVIDUAL CAPABILITY - Making an assessment

Does the task require unusual strength, height, etc?

83 Manual handling injuries are more often associated with the nature of the operation than with variations in individual capability. Therefore any assessment which concentrates on individual capability at the expense of task or workplace design is likely to be misleading. However, it is an inescapable fact that the ability to carry out manual handling in safety does vary between individuals.

84 In general the lifting strength of women as a group is less than that of men. But for both men and women the range of individual strength and ability is large, and there is considerable overlap; some women can deal safely with greater loads than some men.

85 An individual's physical capacity varies with age, typically climbing until the early 20s and declining gradually from the

mid-40s. It should be recognised therefore that the risk of manual handling injury may be somewhat higher for employees in their teens or in their 50s and 60s, though again the range of individual capability is large and the benefits of experience and maturity should not be overlooked.

86 In deciding whether the strength, height and other requirements of a manual handling operation should be regarded as unusual it is not unreasonable to have some regard to the nature of the work. For example, strength requirements that would be considered unusual for a group of employees engaged in office work might not be regarded as out of the ordinary for a group of employees engaged predominantly in heavy physical labour. It would also be unrealistic to ignore the element of self-selection that often occurs for jobs that are relatively demanding physically.

87 As a general rule, however, the risk of injury should be regarded as unacceptable if the manual handling operation cannot be performed in safety by most reasonably fit, healthy employees.

Does the job put at risk those who are pregnant or have a health problem?

88 Pregnancy has significant implications for the risk of manual handling injury. Particular care should be taken for women who may handle loads during the last 3 months of a normal pregnancy and for 3 months following a normal delivery.

89 Allowance should be made for any known health problem which might have a bearing on the ability to carry out manual handling operations in safety. If there is good reason to suspect that an individual's state of health might significantly increase the risk of injury from manual handling operations, medical advice should be sought.

Does the task require special knowledge or training for its safe performance?

90 The risk of injury from a manual handling task will be increased where a worker does not have the knowledge or training necessary for its safe performance.

91 For example ignorance of any unusual characteristics of a load, or of a system of work designed to ensure safety, may lead to injury. And of course remedial measures such as the provision of mechanical aids to handling may themselves create a need for training, for example in the proper use of those aids.

Regulation 4(1)(b)(ii) Reducing the risk of injury

> Each employer shall - where it is not reasonably practicable to avoid the need for his employees to undertake any manual handling operations which involve a risk of their being injured -
>
> (ii) take appropriate steps to reduce the risk of injury to those employees arising out of their undertaking any such manual handling operations to the lowest level reasonably practicable....

Striking a balance

92 It will usually be convenient to continue with the same structured approach used during the assessment of risk, considering in turn the **task**, the **load**, the **working environment** and **individual capability.**

93 The emphasis given to each of these factors may depend in part upon the nature and circumstances of the manual handling operation. Routine manual handling operations carried out in essentially unchanging circumstances, for example in manufacturing processes, may lend themselves particularly to improvement of the task and workplace.

94 However, manual handling operations carried out in circumstances which change continually, for example certain activities carried out in mines or on construction sites, may offer less scope for improvement of the task and workplace. More interest may therefore focus on the load - for example can it be made easier to handle? In addition the provision of effective training will be especially important, to enable employees to use good handling technique, and to recognise and either avoid or modify hazardous handling operations.

An ergonomic approach

95 However, health, safety and productivity are most likely to be optimised if an ergonomic approach is used to design the manual handling operation as a whole. Wherever possible full consideration should be given to the **task**, the **load**, the **working environment**, **individual capability** and the relationship between them, with a view to fitting the operation to the individual rather than the other way around.

96 While better job or workplace design may not eliminate handling injuries, the evidence is that it can greatly reduce them, and that it can do so cost-effectively. Particular consideration should be given to the provision of mechanical assistance where this is reasonably practicable.

Mechanical assistance

97 Mechanical assistance involves the use of handling aids - an element of manual handling is retained but bodily forces are applied more efficiently, reducing the risk of injury. There are

many examples. A simple lever can reduce the risk of injury merely by lessening the bodily force required to move a load, or by removing fingers from a potentially damaging trap. A hoist, either powered or hand operated, can support the weight of a load and leave the handler free to control its positioning. A trolley, sack truck or roller conveyor can greatly reduce the effort required to move a load horizontally. Chutes are a convenient way of using gravity to move loads from one place to another. Handling devices such as hand-held hooks or suction pads can simplify the problem of handling a load that is difficult to grasp.

[illustrations to be inserted]

Involving the workforce

98 Employees and their safety representatives should be closely involved in any redesign of the system of work and encouraged to report its effects. Safety committees should be given the opportunity to contribute to the development of good handling practice.

Industry-specific guidance

99 The development of industry-specific guidance within the framework established by the Regulations and this general guidance will provide a valuable source of information on preventive action that has been found effective for particular activities or types of work.

THE TASK - Reducing the risk of injury

Improving task layout

100 Changes to the layout of the task can reduce the risk of injury by, for example, improving the flow of materials or products. Such changes will often bring the additional benefits of increased efficiency and productivity.

101 The optimum position for storage of loads, for example, is around waist height; storage much above or below this height should be reserved for loads that are lighter or more easily handled, or loads that are handled infrequently. Storage above shoulder height is likely to result in less stable handling, creating a substantial increase in the risk of injury. Storage at low levels encourages stooping.

Using the body more efficiently

102 A closely related set of considerations concerns the way in which the handler's body is used. Changes to the task layout, the equipment used, or the sequence of operations can reduce or remove the need for twisting, stooping and stretching.

103 In general, any change that allows the load to be held closer to the body is likely to reduce the risk of injury. The level of stress at the lower back will be reduced; the weight of the load will be more easily counterbalanced by the weight of the body; and the load will be more stable and the handler less likely to lose control of it. Moreover, if the load is hugged to the body friction with the handler's garments will steady it and may help to support its weight. The need for protective clothing should be considered (see paragraphs 115 and 116).

104 The closeness of the load to the body is often influenced by foot placement. The elimination of obstacles which need to be reached over or into - for example poorly placed pallets, excessively deep bins - will permit the handler's feet to be placed beneath or adjacent to the load.

105 Where possible the handler should be able to move in close to the load before beginning the manual handling operation. The handler should also be able to address the load squarely, facing in the direction of intended movement.

106 The risk of injury may also be reduced if lifting can be replaced by controlled pushing or pulling. For example it may be possible to slide the load or roll it along. However, uncontrolled sliding or rolling, particularly of large or heavy loads, may introduce fresh risks of injury.

107 For both pulling and pushing a secure footing should be ensured, and the hands applied to the load at a height between waist and shoulder wherever possible. A further option, where other safety considerations allow, is to push with the handler's back against the load, using the strong leg muscles to exert the force.

[explanatory diagrams to be inserted]

Improving the work routine

108 The risk of manual handling injury can also be reduced by careful attention to the work routine. Minimising the need for fixed postures dictated by sustained holding or supporting of a load will reduce fatigue and the associated fall-off in muscular efficiency. Attention to the frequency of handling loads, especially those that are heavy or awkward, can also reduce fatigue and the risk of injury. Where possible, tasks should be self-paced and employees trained to adjust their rate of working to optimise safety and productivity.

109 An inflexible provision of rest pauses may not be an efficient method of reducing the risk of injury. The large variation in individual susceptibility to muscular fatigue means that mandatory, fixed breaks are generally less effective than those taken voluntarily within the constraints of what is possible in terms of work organisation.

110 A better solution can often be found in job rotation where this allows one group of muscles to rest while others are being used. Periods of heavy work may be interspersed with lighter activities such as paper work or the monitoring of instruments. Job rotation can also bring advantages in reduced monotony and increased attentiveness. However, where rotation merely repeats the use of the same group of muscles, albeit on a different task, it is generally ineffective in reducing the risk of manual handling injury.

Handling while seated

111 For the reasons given in paragraphs 58 and 59 the loads that can be handled in safety by a person who is seated are substantially less than can be dealt with while standing. This activity therefore demands particular care. Lifting loads from the floor while seated should be avoided where possible.

112 The possibility of accidental movement of the seat should be considered. Castors may be inadvisable, especially on hard floors. A swivel-action seat will help the handler to face the load without having to twist the trunk. The relative heights of seats and work surfaces should be well matched. Further advice on this is given in the HSE booklet Seating at work (full reference at Appendix 1).

Team handling

113 Where a handling operation would be difficult or unsafe for one person, handling by a team of two or more may provide an answer. However, team handling can introduce additional hazards and caution should be exercised for the reasons given in paragraphs 61 to 63.

114 For safe team handling there should be enough space for the handlers to manoeuvre as a group. They should have adequate access to the load, and the load should provide sufficient handholds; if the load is particularly small or difficult to grasp then a handling aid such as a stretcher or slings should be used. One person should plan and then take charge of the operation, ensuring that movements are coordinated. Team members should preferably be of broadly similar height and physical capability.

Personal protective equipment

115 The nature of the load, or the environment in which it is handled, may necessitate the use of personal protective equipment (PPE) such as gloves, aprons, overalls, gaiters or safety footwear. In these cases the protection offered by PPE should not be compromised to facilitate the manual handling operation. Alternative methods of handling may need to be considered where manual handling is likely to lead to risks from the contents of the load or from external contamination.

116 PPE and indeed all work clothing should be well fitting and restrict movement as little as possible. Fasteners, pockets and other features on which loads might snag should be concealed. Gloves should be close fitting and supple, to interfere with manual dexterity as little as possible. Footwear should provide adequate support, a stable, non-slip base and proper protection. Restrictions on the handler's movement caused by wearing protective clothing need to be recognised in the design of the task.
[refer to The Provision and Use of Personal Protective Equipment Regulations 199- (full reference to appear in Appendix 1)]

Maintenance & accessibility of equipment

117 All equipment provided for use during manual handling, including handling aids and PPE, should be well maintained and there should be a defect reporting and correction system. The siting of equipment can be important: handling aids and PPE that are not readily accessible are less likely to be used fully and effectively.
[refer to The Provision and Use of Work Equipment Regulations 199- (full reference to appear in Appendix 1)]

Safety of machinery - European standards

118 Under Machinery Directive 89/392/EEC machinery placed on the market must satisfy certain essential health and safety requirements. This is a product safety Directive made under Article 100A of the Treaty of Rome and will be implemented by the Department of Trade and Industry. One of the Directive's requirements is that machinery be designed to facilitate its safe handling.

119 In support of this requirement CEN, one of the European standards making bodies, is preparing an EN (a harmonised European standard) entitled "Safety of machinery - Human physical performance". The purpose of the proposed EN is to assist machinery designers and manufacturers. Such standards have no status in relation to Directives made under Article 118A of the Treaty, such as Directive 90/296/EEC on the manual handling of loads. The EN will therefore have no direct relevance to the Manual Handling Operations Regulations 199-.

THE LOAD - Reducing the risk of injury

Making it lighter

120 Where a risk of injury from the manual handling of a load is identified, consideration should be given to reducing its weight. For example liquids and powders may be packaged in smaller containers. Where loads are bought in it may be possible to specify lower package weights. However the breaking down of loads will not always be the safest course: the consequent increase in the frequency of handling should not be overlooked.

121 If a great variety of weights is to be handled it may be possible to sort the loads into weight categories so that additional precautions can be applied selectively, where most needed.

Making it smaller or easier to manage

122 Similarly, consideration should be given to making loads less bulky so that they can be grasped more easily and the centre of gravity brought closer to the handler's body. Again, it may be possible to specify smaller or more manageable loads, or to redesign those produced in-house.

Making it easier to grasp

123 Where the size, surface texture or nature of a load makes it difficult to grasp, consideration should be given to the provision of handles, hand grips, indents or any other feature designed to improve the handler's grasp. Where a load is bulky rather than heavy it may be easier to carry it at the side of the body if it has suitable handholds, or if slings or other carrying devices can be provided.

124 The positioning of handholds can play a part in reducing the risk of injury. For example handholds at the top of a load may reduce the temptation to stoop when lifting it from a low level. However, depending upon the size of the load, this might also necessitate carriage with bent arms which could increase fatigue.

125 Handholds should be of a width to clear the breadth of the palm, and a depth to accommodate the knuckles and any gloves which may need to be worn.

Making it more stable

126 Where possible, packaging should be such that objects will not shift unexpectedly while being handled. Where the load as a whole lacks rigidity it may be preferable to use slings or other aids to maintain effective control during handling. Ideally, containers holding liquids or free-moving powders should be well filled, leaving only a small amount of free space; where this is not possible alternative means of handling should be considered.

Making it less damaging to hold

127 As far as possible loads should be clean and free from dust, oil, corrosive deposits, etc. To prevent injury during the manual handling of hot or cold materials an adequately insulated container should be used; failing this suitable handling aids or PPE will be necessary. Sharp corners, jagged edges, rough surfaces and the like should be avoided where possible; again, where this cannot be achieved then the use of handling aids or PPE will be necessary. In selecting personal protective equipment the advice given in paragraphs 115 and 116 should be noted.

THE WORKING ENVIRONMENT - Reducing the risk of injury

Removing space constraints

128 Gangways and other working areas should be large enough to allow adequate room to manoeuvre during manual handling operations. Particular attention should be given to providing sufficient clear floor space and head room; constrictions caused by narrow doorways and the positioning of fixtures, machines, etc should be avoided. In many cases much can be achieved simply by improving the standard of housekeeping. [refer to The Workplace Regulations 199- (full reference to appear in Appendix 1)]

The condition and nature of floors

129 On permanent sites, both indoors and out, a flat, well maintained and properly drained surface should be provided. In construction, agriculture, mining and other activities where manual handling may take place on temporary surfaces the ground should be prepared if possible and kept even and firm; if possible suitable coverings should be provided. Temporary work platforms should be firm and stable.

130 Spillages of water, oil, soap, food scraps and other substances likely to make the floor slippery should be cleared away promptly. Where necessary, and especially where floors can become wet, attention should be given to the choice of slip-resistant surfacing.

131 Particular care is necessary where manual handling is carried out on a surface that is unstable or susceptible to movement, as for example on a boat, a moving train or a mobile work platform. In these conditions the capacity to handle loads in safety may be reduced significantly.

Working at different levels

132 Where possible all manual handling activities should be carried out on a single level. Where more than one level is involved the transition should preferably be made by a gentle slope or, failing that, by well positioned and properly maintained steps. Manual handling on steep slopes should be avoided as far as possible. Working surfaces such as benches should, where possible, be at a uniform height to reduce the need for raising or lowering loads.

The thermal environment

134 There is less risk of injury if manual handling is performed in a comfortable working environment. Extremes of temperature and excessive humidity should be avoided where possible, either by improving environmental control or relocating the work.

135 Where these conditions cannot be changed, for example when manual handling is necessarily performed out of doors in extreme weather, or close to a very hot process, or in a refrigerated storage area, and the use of PPE is necessary the advice given in paragraphs 115 and 116 should be noted.

Lighting

136 There should be sufficient well-directed light to enable handlers to see clearly what they are doing and the layout of the workplace, and to make accurate judgements of distance and position.

INDIVIDUAL CAPABILITY - Reducing the risk

Personal capacity

137 Particular consideration should be given to employees who are or recently have been pregnant, or who are known to have a history of back trouble, hernia or other manual handling injury. However, beyond such specific pointers to increased risk of injury the scope for preventive action on an individual basis is limited.

138 Clearly an individual's state of health, fitness and strength can significantly affect the ability to perform a task safely. But even though these characteristics vary enormously, studies have shown no close correlation between any of them and injury incidence. There is therefore insufficient evidence for reliable selection of individuals for safe manual handling on the basis of such criteria. It is recognised, however, that there is often a degree of self-selection for work that is physically demanding.

139 It is also recognised that motivation and self-confidence in the ability to handle loads are important factors in reducing the risk of injury. These are linked with fitness and familiarity. Unaccustomed exertion - whether in a new task or on return from holiday or sickness absence - can carry a significant risk of injury and requires particular care.

Knowledge and training

140 It should not be assumed that knowledge and training alone will ensure safe manual handling. The primary objective in reducing the risk of injury should always be to optimise the design of the manual handling operation, improving the task, the load and the working environment as appropriate. The manual handling operation should be designed to suit individuals, not the other way around. However as a complement to a safe system of work, rather than a substitute for it, effective training has an important part to play in reducing the risk of manual handling injury.

141 Employers should ensure that their employees understand clearly how a manual handling operation has been designed to ensure their safety. Employees, their safety representatives and safety committees should be closely involved in the development and implementation of manual handling training, and the monitoring of its effectiveness.

142 In devising a training programme for safe manual handling particular attention should therefore be given to imparting a clear understanding of:

(a) how potentially hazardous loads may be recognised;
(b) how to deal with unfamiliar loads;
(c) the proper use of handling aids;
(d) the proper use of personal protective equipment;
(e) features of the working environment that contribute to safety;
(f) the importance of good housekeeping;
(g) factors affecting individual capability;
(h) good handling technique.

143 Employees should be trained to recognise loads whose weight, in conjunction with their shape and other features and the circumstances in which they are handled, might cause injury. Simple methods for estimating weight on the basis of volume may be taught. Where volume is less important than the density of the contents, as for example in the case of a dustbin containing refuse, an alternative technique for assessing the safety of handling should be taught, such as rocking the load from side to side before attempting to lift it.

144 In general, unfamiliar loads should be treated with caution. For example, it should not be assumed that apparently empty drums or other closed containers are in fact empty. The load may first be tested, for example by attempting to raise one end. Employees should be taught to apply force gradually until either undue strain is felt, in which case the task should be reconsidered, or it is apparent that the task is within the handler's capability.

145 In relation to paragraph 142(a) the Regulations include the following requirement:

Regulation 4(1)(b)(iii) The load - information and training

Each employer shall - where it is not reasonably practicable to avoid the need for his employees to undertake any manual handling operations which involve a risk of their being injured -

(iii) take appropriate steps to provide any of those employees who are undertaking any such manual handling operations with general indications and, where it is reasonably practicable to do so, precise information on
  (aa) the weight of each load, and
  (bb) the heaviest side of any load whose centre of gravity is not positioned centrally.

The load - providing information and training

146 The requirement of Regulation 4(1)(b)(iii) can be met in a variety of ways, depending upon the circumstances.

147 Where possible the employer should ensure that loads are clearly marked with their weight. Where this is not reasonably practicable employees should be given general information about the range of loads to be handled, including a general indication of their weights.

148 Similarly, in the case of loads whose centre of gravity is not positioned centrally, marking of the heaviest side will often be possible. Common examples are typewriters and VDU monitors whose uneven weight distribution will be disguised if they are packed in an unmarked carton. Failing this, training will again be important in helping employees to be aware of the potential risks and to recognise and deal with them when they arise. Of course, employees must also be made to understand the significance of such information: that, once recognised, the heaviest side of the load should be placed closest to the body during handling.

149 As noted earlier, the Regulations impose duties on employers whose employees carry out manual handling. However, those who originate loads - manufacturers, packers, etc - that are likely to undergo manual handling may also have duties, for example under section 6 of the HSW Act. They should give particular consideration to the possibility of marking loads clearly with their weight and, where appropriate, identifying their heaviest side.

Regulation 4(2) Reviewing the assessment

> The assessment of manual handling operations required by paragraph (1) of this regulation shall be reviewed by the employer concerned when -
>
> (a) there is reason to suspect that the assessment is no longer valid; or
>
> (b) there has been a significant change in the manual handling operations to which the assessment relates;
>
> and the employer shall make such changes to the assessment as are appropriate in the light of the review.

Reviewing the assessment

150 The assessment should be kept up to date. It should be reviewed whenever there is reason to suppose that it is no longer valid, for example because the working conditions or the personnel carrying out the operations have changed. It should also be

reviewed whenever there has been a significant change in the manual handling operations, for example affecting the nature of the task or the load. In each case the assessment should be modified or corrected where necessary.

Regulation 5 Duties of employees

Each employee shall -

(a) make full and proper use of any equipment or system of work provided to him by his employer in compliance with regulation 4(b)(ii) of these regulations; and

(b) inform his employer about any physical condition suffered by him which might reasonably be considered to affect his ability to undertake manual handling operations safely.

Duties of employees

151 Duties are already placed on **employees** by section 7 of the HSW Act, under which they must:

(a) take reasonable care for their own health and safety and that of others who may be affected by their activities; and

(b) cooperate with their employer to enable him to comply with his health and safety duties.

152 Regulation 5 supplements these general duties in the case of manual handling. For example, employees should cooperate with their employer in the making of assessments, observance of safe systems of work, use of safety equipment, reporting of defects and participation in safety training. They should also alert their employer to pregnancy or any medical condition which might affect their ability to handle loads safely.

Regulation 6 Exemption certificates

(1) The Secretary of State for Defence may, in the interests of national security, exempt -

(a) any of the home forces, any visiting force or any headquarters from any requirement imposed by regulation 4 of these Regulations; or

(b) any member of the home forces, any member of a visiting force or any member of a headquarters from the requirement imposed by regulation 5(b) of these Regulations;

and any exemption such as is specified in sub-paragraph (a) or (b) of this paragraph may be granted subject to conditions and to a limit of time and may be revoked at any time by the Secretary of State for Defence in writing.

(2) In this regulation -

(a) "the home forces" has the same meaning as in section 12(1) of the Visiting Forces Act 1952;

(b) "visiting force" and "headquarters" have the meanings respectively assigned thereto by Article 3(2) of the Visiting Forces and International Headquarters (Application of Law) Order 1965; and

(c) a person shall be regarded as a member of a headquarters where he is a civilian member of a headquarters or a military member of a headquarters (within in either case the meaning assigned thereto by paragraph 1 of the Schedule to the International Headquarters and Defence Organisations Act 1964).

Regulation 7 Extension outside Great Britain

These Regulations shall, subject to regulation 3 hereof, apply to and in relation to the premises and activities outside Great Britain to which sections 1 to 59 and 80 to 82 of the Health and Safety at Work etc. Act 1974 apply by virtue of the Health and Safety at Work etc. Act 1974 (Application outside Great Britain) Order 1989 as they apply within Great Britain.

Regulation 8 Repeals and revocations

(1) The enactments mentioned in column 1 of Part I of Schedule 2 to these Regulations are repealed to the extent specified in the corresponding entry in column 3.

(2) The Regulations mentioned in column 1 of Part II of Schedule 2 to these Regulations are revoked to the extent specified in the corresponding entry in column 3.

Repeals and revocations

153 The Regulations, like the European Directive on manual handling, apply a modern ergonomic approach to the prevention of injury: they take account of a wide range of relevant factors including the nature of the task, the load, the working environment and individual capability. The Regulations have therefore replaced a number of outdated provisions which concentrated on the weight of the load being handled. The provisions are listed in Schedule 2 to the Regulations [reproduced at Appendix 5].

APPENDIX 1 Further sources of information

The EC Directive on manual handling

Council Directive of 29 May 1990 on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers (fourth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) (90/269/EEC) Official Journal of the European Communities, 21.6.90, No L 156/9-13

HSE publications (available from HMSO)

Troup JDG and Edwards FC Manual handling - a review paper ISBN 0 11 883778 8
HS(G)48 Human factors in industrial safety ISBN 0 11 885486 0
HS(G)38 Lighting at work ISBN 0 11 883964 0
HS(G)57 Seating at work ISBN 0 11 885431 0
Watch your step - Prevention of slipping, tripping and falling accidents at work ISBN 0 11 883782 6
HS(G)60 Work related upper limb disorders - A guide to prevention ISBN 0 11 885565 0

HSE leaflets (available free from HSE public enquiry points)

IND(G)90L Ergonomics at work

Other publications

Ayoub MM and Mital A Manual Materials Handling, 1989 Taylor and Francis, ISBN 0 85066 383 0
Galer IAR Applied Ergonomics Handbook 2nd edition, 1987 Butterworths, ISBN 0 40 800800 6
Grandjean E Fitting the task to the man: a textbook of occupational ergonomics 4th edition, 1988 Taylor and Francis, ISBN 0 85 066379 2
Nicholson AJ and Ridd J (eds) Health, safety and ergonomics, 1988 Butterworths, ISBN 0 40 802386 4
Pheasant S Bodyspace: anthropometry, ergonomics and design, 1986 Taylor and Francis, ISBN 0 85 066352 0
Pheasant S Ergonomics, work and health, 1991 Macmillan, ISBN 0-333-48997-7
Pheasant S and Stubbs D Lifting and handling - an ergonomic approach, 1991 National Back Pain Association, ISBN.... [publication expected shortly]

For names of ergonomics practitioners and consultants:

The Ergonomics Society, Devonshire House, Devonshire Square, Loughborough, Leics LE11 3DW.
The Institute of Materials Management, Cranfield Institute of Technology, Cranfield, Bedford MK43 0AL.

Examples of industry-specific guidance

Guidance on manual handling, HSC's Health Services Advisory Committee [in preparation]
Manual handling and laying of heavy blocks by a single bricklayer, HSC's Construction Industry Advisory Committee, HSC News Release, November 1989
Guidelines for manual handling in the coal industry, European Coal and Steel Community, Report No. 14, Series 3, 1990

Relevant standards

Any relevant CEN / ISO / British Standards that may emerge.

Other legislation

The Health and Safety (General Provisions) Regulations 199-
The Provision and Use of Personal Protective Equipment Regulations 199-
The Provision and Use of Work Equipment Directive Regulations 199-
The Workplace Regulations 199-
The Control of Substances Hazardous to Health Regulations 1988, SI 1988 No 1657

APPENDIX 2 Numerical guidelines for assessment

Purpose of the guidelines

1 Like the European Directive on manual handling, the Manual Handling Operations Regulations 199- set no specific requirements such as weight limits. Instead, an assessment based on a range of relevant factors is used to determine the risk of injury and point the way to remedial action. A full assessment of every manual handling operation could be a major undertaking and might involve wasted effort.

2 The following numerical guidelines set out an approximate boundary within which manual handling operations are unlikely to create a risk of injury sufficient to warrant more detailed assessment. This should enable assessment work to be concentrated where it is most needed. Even operations lying within the boundary should be avoided or made less demanding wherever it is reasonably practicable to do so.

Individual capability

3 Among the working population the guideline figures for weight and force will give reasonable protection to nearly all men and between one half and two thirds of women. To provide the same degree of protection to nearly all working women the guideline figures should be reduced by about one third. "Nearly all" in this context means about 95%.

4 **THE GUIDELINE FIGURES ARE NOT WEIGHT OR FORCE LIMITS.** They may be exceeded where a more detailed assessment shows that it is safe to do so. However, even for a minority of fit, well-trained individuals working under favourable conditions the guideline figures should not normally be exceeded by more than a factor of about two.

Assumptions

5 The guideline figures should not be regarded as precise recommendations and should be applied with caution, noting particularly the following assumptions:

(a) the handler is standing or crouching in a stable body position with the back substantially upright;
(b) the trunk is not twisted during the operation;
(c) both hands are used to grasp the load;
(d) the hands are not more than shoulder width apart;
(e) the load is positioned centrally in front of the body and is itself reasonably symmetrical;
(f) the load is stable and readily grasped;
(g) the work area does not restrict the handler's posture;
(h) the working environment (heat, cold, wet, condition of floor) and any personal protective equipment used do not interfere with performance of the task.

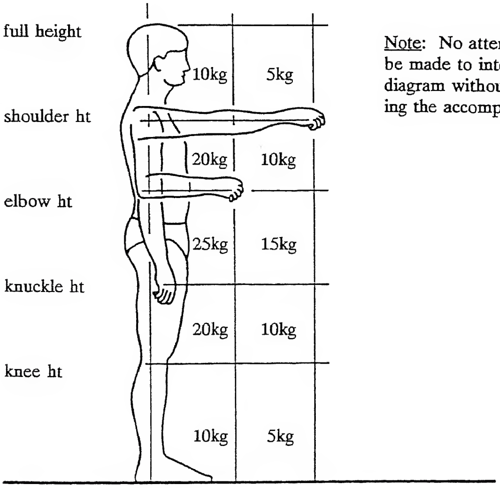
6 Where practical conditions prevent the above assumptions being met in full the guideline figures may need to be reduced. Further information on relevant considerations is given in the main body of this booklet, in the section dealing with assessment (paragraphs 26 to 91).

7 The guidelines can be applied to repetitive handling provided the pace of work is not forced and adequate pauses for rest or recovery are possible. If an operation is repetitive and lies close to the guideline boundary more detailed assessment may be necessary, especially if the interval between operations is less than about one minute or the operations continue for more than about one hour.

Guidelines for LIFTING AND LOWERING

8 The guideline figures for manual handling operations involving lifting and lowering are set out in Figure 5. They take into consideration not only the weight of the load but also its vertical and horizontal position during the handling operation. It will be apparent that the capability to lift or lower safely is reduced significantly if the load is held at arm's length or if the hands pass above shoulder height or below knee height.

9 If the hands enter more than one of the box zones during the operation the smallest weight figure should be used. The transition from one box zone to another is not abrupt; an intermediate



Note: No attempt should be made to interpret this diagram without first reading the accompanying text.

Figure 5 Lifting and lowering

figure may be chosen where the hands are close to a boundary. Where lifting or lowering with the hands beyond the box zones is unavoidable a more detailed assessment should be made.

10 The guideline figures for lifting and lowering should be interpreted on the basis of the advice given in paragraphs 2 to 7, noting particularly the population details given in paragraphs 3 and 4 and the assumptions set out in paragraph 5.

Guidelines for CARRYING

11 The guideline figures for manual handling operations involving carrying are similar to those given for lifting and lowering, though carrying will not normally be carried out with the hands below knuckle height.

12 The guideline figures for carrying should be interpreted on the basis of the advice given in paragraphs 2 to 7, noting particularly the population details given in paragraphs 3 and 4 and the assumptions set out in paragraph 5. It is also assumed that the load is held against the body and is carried no further than about 10 metres without resting. If the load is carried over a longer distance without resting the guideline figures may need to be reduced.

13 Where the load can be carried securely on the shoulder without attendant lifting (as for example when unloading sacks from a lorry) a more detailed assessment may show that it is safe to exceed the guideline figure.

Guidelines for PUSHING AND PULLING

14 The following guideline figures are for manual handling operations involving pushing and pulling, whether the load is slid, rolled or supported on wheels. The guideline figure for starting or stopping the load is a force of about 250 Newtons (ie a force of about 25 kg as measured by a spring balance). The guideline figure for keeping the load in motion is a force of about 100 Newtons.

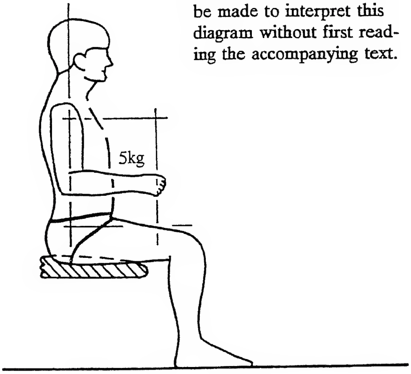
[Explanatory diagram to be inserted]

15 The guideline figures for pushing and pulling should be interpreted on the basis of the advice given in paragraphs 2 to 7, noting particularly the population details given in paragraphs 3 and 4 and the assumptions set out in paragraph 5. It is also assumed that the force is applied with the hands between knuckle and shoulder height; if this is not possible the guideline figures may need to be reduced. No specific limit is intended as to the distance over which the load is pushed or pulled provided there are adequate opportunities for rest or recovery.

Guidelines for HANDLING WHILE SEATED

16 The guideline figure for handling operations carried out while seated is given in Figure 6 and applies only when the hands are within the box zone indicated. If handling beyond the box zone is unavoidable a more detailed assessment should be made.

17 The guideline figure for handling while seated should be interpreted on the basis of the advice given in paragraphs 2 to 7, noting particularly the population details given in paragraphs 3 and 4 and the assumptions set out in paragraph 5, excluding assumption 5(a).



Note: No attempt should be made to interpret this diagram without first reading the accompanying text.

Figure 6 Handling while seated

18 **Remember - these guideline figures should not be regarded as precise recommendations and should be applied with caution, noting particularly the assumptions on which they are based.**

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APPENDIX 3 Checklists

The 1988 Consultative Document contained a short checklist for employers as an appendix to the main guidance text. Respondents generally welcomed the checklist, and its positioning in an easily found appendix, but there were a number of requests that the checklist be expanded. One way of doing this would be to subdivide the checklist, for example:

Initial appraisal - Regulations 2 and 4(1)(a)
Assessment of risk - Regulation 4(1)(b)(i)
Reducing the risk - Regulation 4(1)(b)(ii) and (iii).

Would you find this helpful? Have you any view as to the level of detail you would like to see in such checklists, or a preference as to how they should be laid out? One possibility is that the checklist(s) would be in the form of a questionnaire, covering one or two sides of A4, which could be photocopied and filled in by the user.

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APPENDIX 4 Case studies

It has been suggested that we should publish a selection of case studies, to serve as worked examples. Would you find this helpful? Would you prefer case studies to be appended to this general guidance or to be included in industry specific guidance as it is developed? Would you like to offer material in due course?

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APPENDIX 5 The Manual Handling Operations Regulations 199-

In this consultative document the draft Manual Handling Operations Regulations 199- are reproduced in full at Annex 1. In Annex 2 the individual regulations are reproduced again, interspersed with respective guidance.

Following consultation the guidance will be published in a format similar to Annex 2, with each regulation appearing at the head of its respective section of guidance. It has been suggested that it would be helpful if, in addition, the full text of the Regulations were reproduced as an appendix to the guidance. This would help the reader who wished to refer rapidly to the Regulations alone but who did not have the relevant Statutory Instrument to hand. Would you find this helpful?

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COUNCIL DIRECTIVE

of 29 May 1990

on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers (fourth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC)

(90/269/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 118a thereof

Having regard to the Commission proposal (¹) submitted after consultation with the Advisory Committee on Safety, Hygiene and Health Protection at Work,

In cooperation with the European Parliament (²),

Having regard to the opinion of the Economic and Social Committee(³),

Whereas Article 118a of the Treaty provides that the Council shall adopt, by means of Directives, minimum requirements for encouraging improvements, especially in the working environment, to guarantee a better level of protection of the health and safety of workers;

Whereas, pursuant to that Article, such Directives must avoid imposing administrative, financial and legal constraints in a way which would hold back the creation and development of small and medium-sized undertakings;

Whereas the Commission communication on its programme concerning safety, hygiene and health at work (⁴), provides for the adoption of Directives designed to guarantee the health and safety of workers at the workplace;

Whereas the Council, in its resolution of 21 December 1987 on safety, hygiene and health at work (⁵), took note of the Commission's intention of submitting to the Council in the near future a Directive on protection against the risks resulting from the manual handling of heavy loads;

Whereas compliance with the minimum requirements designed to guarantee a better standard of health and safety at the workplace is essential to ensure the health and safety of workers;

Whereas this Directive is an individual Directive within the meaning of Article 16 (1) of Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the health and safety of workers at work (⁶); whereas therefore the provisions of the said Directive are fully applicable to the field of the manual handling of loads where there is a risk particularly of back injury to workers, without prejudice to more stringent and/or specific provisions set out in this Directive;

Whereas this Directive constitutes a practical step towards the achievement of the social dimension of the internal market;

Whereas, pursuant to Decision 74/325/EEC (⁷), the Advisory Committee on Safety, Hygiene and Health Protection at Work shall be consulted by the Commission with a view to drawing up proposals in this field,

HAS ADOPTED THIS DIRECTIVE:

SECTION I

GENERAL PROVISIONS

Article 1

Subject

1. This Directive, which is the fourth individual Directive within the meaning of Article 16 (1) of Directive 89/391/EEC, lays down minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers.

2. The provisions of Directive 89/391/EEC shall be fully applicable to the whole sphere referred to in paragraph 1, without prejudice to more restrictive and/or specific provisions contained in this Directive.

Article 2

Definition

For the purposes of this Directives, 'manual handling of loads' means any transporting or supporting of a load, by one

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(¹) OJ No C 117, 4. 5. 1988, p. 8.
(²) OJ No C 326, 19. 12. 1988, p. 137 and OJ No C 96, 17. 4. 1990, p. 82.
(³) OJ No C 318, 12. 12. 1988, p. 37.
(⁴) OJ No C 28, 3. 2. 1988, p. 3.
(⁵) OJ No C 28, 3. 2. 1988, p. 1.
(⁶) OJ No L 183, 29. 6. 1983, p. 1.
(⁷) OJ No L 185, 9. 7. 1974, p. 15.

or more workers, including lifting, putting down, pushing, pulling, carrying or moving of a load, which, by reason of its characteristics or of unfavourable ergonomic conditions, involves a risk particularly of back injury to workers.

SECTION II

EMPLOYERS' OBLIGATIONS

Article 3

General provision

1. The employer shall take appropriate organizational measures, or shall use the appropriate means, in particular mechanical equipment, in order to avoid the need for the manual handling of loads by workers.

2. Where the need for the manual handling of loads by workers cannot be avoided, the employer shall take the appropriate organizational measures, use the appropriate means or provide workers with such means in order to reduce the risk involved in the manual handling of such loads, having regard to Annex I.

Article 4

Organization of workstations

Wherever the need for manual handling of loads by workers cannot be avoided, the employer shall organize workstations in such a way as to make such handling as safe and healthy as possible and:

(a) assess, in advance if possible, the health and safety conditions of the type of work involved, and in particular examine the characteristics of loads, taking account of Annex I;

(b) take care to avoid or reduce the risk particularly of back injury to workers, by taking appropriate measures, considering in particular the characteristics of the working environment and the requirements of the activity, taking account of Annex I.

Article 5

Reference to Annex II

For the implementation of Article 6 (3) (b) and Articles 14 and 15 of Directive 89/391/EEC, account should be taken of Annex II.

Article 6

Information for, and training of, workers

1. Without prejudice to Article 10 of Directive 89/391/EEC, workers and/or their representatives shall be informed of all measures to be implemented, pursuant to this Directive, with regard to the protection of safety and of health.

Employers must ensure that workers and/or their representatives receive general indications and, where possible, precise information on:

- the weight of a load,
- the centre of gravity of the heaviest side when a package is eccentrically loaded.

2. Without prejudice to Article 12 of Directive 83/391/EEC, employers must ensure that workers receive in addition proper training and information on how to handle loads correctly and the risks they might be open to particularly if these tasks are not performed correctly, having regard to Annexes I and II.

Article 7

Consultation of workers and workers' participation

Consultation and participation of workers and/or of their representatives shall take place in accordance with Article 11 of Directive 89/391/EEC on matters covered by this Directive, including the Annexes thereto.

SECTION III

MISCELLANEOUS PROVISIONS

Article 8

Adjustment of the Annexes

Alterations of a strictly technical nature to Annexes I and II resulting from technical progress and changes in international regulations and specifications or knowledge in the field of the manual handling of loads shall be adopted in accordance with the procedure provided for in Article 17 of Directive 89/391/EEC.

Article 9

Final provisions

1. Member States shall bring into force the laws, regulations and administrative provisions needed to comply with this Directive not later than 31 December 1992.

They shall forthwith inform the Commission thereof.

2. Member States shall communicate to the Commission the text of the provisions of national law which they adopt, or have adopted, in the field covered by this Directive.

3. Member States shall report to the Commission every four years on the practical implementation of the provisions of this Directive, indicating the points of view of employers and workers.

The Commission shall inform the European Parliament, the Council, the Economic and Social Committee and the Advisory Committee on Safety, Hygiene and Health Protection at Work thereof.

4. The Commission shall report periodically to the European Parliament, the Council and the Economic and Social Committee on the implementation of the Directive in the light of paragraphs 1, 2 and 3.

Article 10

This Directive is addressed to the Member States.

Done at Brussels, 29 May 1990.

For the Council
The President
B. AHERN

ANNEX I (*)

REFERENCE FACTORS

(Article 3 (2), Article 4 (a) and (b) and Article 6 (2))

1. Characteristics of the load

The manual handling of a load may present a risk particularly of back injury if it is:

- too heavy or too large,
- unwieldy or difficult to grasp,
- unstable or has contents likely to shift,
- positioned in a manner requiring it to be held or manipulated at a distance from the trunk, or with a bending or twisting of the trunk,
- likely, because of its contours and/or consistency, to result in injury to workers, particularly in the event of a collision.

2. Physical effort required

A physical effort may present a risk particularly of back injury if it is:

- too strenuous,
- only achieved by a twisting movement of the trunk,
- likely to result in a sudden movement of the load,
- made with the body in an unstable posture.

3. Characteristics of the working environment

The characteristics of the work environment may increase a risk particularly of back injury if:

- there is not enough room, in particular vertically, to carry out the activity,
- the floor is uneven, thus presenting tripping hazards, or is slippery in relation to the worker's footwear,
- the place of work or the working environment prevents the handling of loads at a safe height or with good posture by the worker,
- there are variations in the level of the floor or the working surface, requiring the load to be manipulated on different levels,
- the floor or foot rest is unstable,
- the temperature, humidity or ventilation is unsuitable.

4. Requirements of the activity

The activity may present a risk particularly of back injury if it entails one or more of the following requirements:

- over-frequent or over-prolonged physical effort involving in particular the spine,
- an insufficient bodily rest or recovery period,
- excessive lifting, lowering or carrying distances,
- a rate of work imposed by a process which cannot be altered by the worker.

(*) With a view to making a multi-factor analysis, reference may be made simultaneously to the various factors listed in Annexes I and II.

ANNEX II (*)

INDIVIDUAL RISK FACTORS

(Articles 5 and 6 (2))

The worker may be at risk if he/she:

- is physically unsuited to carry out the task in question,
- is wearing unsuitable clothing, footwear or other personal effects,
- does not have adequate or appropriate knowledge or training.

(*) With a view to multi-factor analysis, reference may be made simultaneously to the various factors listed in Annexes I and II.